MICHIGAN DEPARTMENT OF NATURAL RESOURCES

INTEROFFICE COMMUNICATION

June 24, 1980

TO: Larry Fink
Office of Toxic Materials Control
Karl Zollner, Engineering and Technical Services

FROM: Brad Venman BCV
Office of Toxic Materials Control

SUBJECT: Toxicity Information on Grav-i-Flo Products FGC-164 and FGC-173: NPDES Permit for Bronson Specialties, Bronson, Michigan

Since the above named chemicals are considered proprietary information by Grav-i-Flo, the constituents will be referred to by letter code.

Product FGC-164 is sold in a powdered form; it has ten active constituents.

Constituent A is composed of water soluble, odorless, white crystals. This substance is used in the manufacturing of medicines, photographic chemicals, and food additives. Limited animal studies suggest a relatively low oral toxicity for this substance (oral rat minimum lethal dose = 4,000 mg/kg). This substance is moderately irritating to laboratory animals by topical application, and severely irritating to eyes in low doses. Upper respiratory track irritation has been noted in animals inhaling aerosols of Constituent A. This substance is moderately acutely toxic to aquatic life, having an immobilization threshold concentration to Dapnia of 300-424 mg/1, and a 96 hour TLm to bluegill sunfish and mosquito fish of 300 and 1200 mg/1, respectively. One reference indicated that this substance is highly toxic to plant life, but concentrations or specific testing protocols were not outlined in the reference. Another reference stated that 6 months of watering greenhouse plants with 100-400 mg/1 solutions of Constituent A was not injurious to the plants. Chronic ingestion of high concentrations (1025 mg/1) of Constituent A in drinking water by livestock has caused diarrhea. Ingestion by rats of 10-20 g/1 in drinking water resulted in neonate death. An abstract of a Russian study showed decreased survival rate, and decreased fertility (from either premature, or delayed sexual development) in guppies chronically exposed to 50 mg/1 (duration of exposure not given). Repeated dermal exposure to Constituent A may elicit skin sensitivity reactions in humans. No information on the carcinogenicity, teratogenicity, or mutagenicity of this substance could be located. This substance may cause organoleptic tainting of water at concentrations ranging from 50 to 78 mg/1 and above.

Orig
cc- T. Newell

Constituent B is composed of water insoluble, noncombustible, odorless, colorless crystals or white power, which is used in manufacturing of glass, abrasives, in water filtration, in cosmetics, and in various other applications. This compound is practically nontoxic to laboratory animals by ingestion in acute exposures (oral rat LD50 = 3,160 mg/kg). However, chronic inhalation of dusts of this substance may cause an adverse respiratory reaction characterized by nodular fibrosis with restrictive and obstructive pulmonary function. This substance was not carcinogenic in rats, guinea pigs, mice, or rabbits by subcutaneous, intraperitoneal, intratracheal, intravenous, or intramesenteric routes of administration. An abundance of colloidal fibers of the substance in water may encourage diatom proliferation. No other toxicity or environmental disposition information is available for this substance.

Constituent C - We have no specific information regarding the toxicity of this compound. However, information for this class of compounds indicates moderate acute toxicity to fish with the minimum lethal dose levels reported at 5-10 mg/l.

Constituent D is not expected to cause any problems of environmental concern, though dust may be a potential explosion hazard. This substance is biodegradable. A Material Safety Data Sheet for Constituent D recommends that wastes may be safely flushed to a sanitary sewer.

Constituent E is composed of water soluble white flakes or lumps with a pleasant odor. It is used in chemical manufacturing, in the production of rayon and cellophane, in petroleum refining, pharmaceuticals, rubber reclamation, and in many other applications. This compound is highly corrosive to all tissues, and an OSHA occupational exposure limit has been set at 2 mg/m^3 in air. The only reliable acute toxicity study located for this substance was an intraperitoneal LD50 to mice of 40 mg/kg. This compound is moderately toxic to aquatic life having a 96 hour TLm to mosquito fish of 125 ppm and a toxic threshold to Daphnia magna of 40-240 ppm. One chronic aquatic study showed decreased fertility, survival rate, and weight gain in guppies exposed to 25 mg/l of this substance. This compound is considered nonbioaccumulative and nonpersistent. No other pertinent toxicity information is available for this substance.

Constituent F is a mixture of compounds that is water insoluble, noncombustible, odorless powder. This would be relatively nontoxic by ingestion in acute exposures. However, chronic inhalation of dusts of this substance may result in an adverse respiratory reaction characterized by nodular fibrosis that may restrict or obstruct pulmonary function.

Constituent G is composed of white to yellow water soluble flakes, and is a widely used surfactant and wetting agent. It is slightly acutely toxic to mammals by ingestion (oral rat and mouse LD50 = 1,260 and 2,000 mg/kg, respectively). This compound is highly acutely toxic to aquatic life, having a 96 hour TLm of 19 ppm to bluegills. In a subchronic aquatic study, the toxic threshold to trout and carp for a 15 day exposure was 4 to 6 mg/l. Chronic exposure of trout to 5 ppm of Constituent G caused loss of mobility to spermatocytes and lethality to fertilized eggs. In carcinogenicity tests, rats and mice orally dosed with large amounts of Constituent G for 104 weeks and 30 days, respectively, failed to develop tumors. This compound is not persistent and is biodegraded. It can organoleptically taint water at 4 mg/l.

Constituent H is a colorless crystalline compound. It is slightly soluble in water. This compound is used in many products, including, adhesives, water treatment additives, and drilling foams. Constituent H is described as a caustic material that is irritating to the skin and mucous membranes. Data for Constituent H concerning its toxicity to aquatic and terrestrial life is scant. The lowest dose by an oral route of administration reported to have caused death in dogs and pigs is 250 mg/kg. Constituent H is relatively nontoxic to aquatic life in acute exposure tests (mosquito fish 96 hour TLm = 2,370 mg/l). The 100 hour toxicity threshhold to Daphnia magna is 247 mg/l. Industry has supplied information that reports an oral LD50 for rats of 1280 mg/kg. No other pertinent information is available for this compound.

Constituent I is composed of colorless crystals which are highly soluble in water. It is used in photographic developers, treatment of municipal and boiler water, in detergent compounds, in tanneries, paper mills, and laundry plants. There is no definitive acute toxicity data available for this compound. However, studies with rats dosed with products containing Constutient I as the active ingredient indicate that this compound is only slightly acutely toxic to laboratory animals by the oral route of administration. Constituent I is moderately irritating to skin and moderately to severely irritating to eyes when applied to these tissues. Constituent I is not strongly toxic to fish, the principal effect being a change in pH value. The 96-hour TLm for mosquito fish is 151 mg/l. This compound is slightly more toxic to aquatic invertebrates. The threshold concentration of Constituent I for immobilization of Daphnia was reported to be less than 52 mg/l. Although compounds of this type are not likely to exhibit toxic effects upon aquatic life themselves, discharge of excessive amounts of these substances may contribute to nutrient overloading of receiving waters.

Constituent J is a refined, colorless, odorless liquid which is insoluble in water, but is soluble in benzene, chloroform, and ether. It is used as a lubricant. No acute aquatic toxicity

information is available for this substance. This compound was shown to be neoplastic in mice after intraperitoneal injections of 53 mg/kg, administered intermittently for 12 weeks. This compound can stimulate microbial growths when applied to soil, although degradation products or residuals can eventually inhibit growth. No other environmental disposition information is available for this substance.

Product FGC-173 is also sold in powdered form; it has seven active constituents.

This product is composed of the following six constituents as described in product FGC-164: A, C, D, H, I, and J.

There is one additional constituent in product FGC-173. Constituent K is composed of a mixture of compounds. It is practically insoluble in water. We have no information regarding the toxicity of Constituent K. The threshold limit in air is set at the level of an inert or nuisance dust, or 10 mg/m^3. The plant critical concentration is 25 mg/l.

I hope this information is helpful to you. If you have any questions regarding the constituents of the above products or the products themselves, please do not hesitate to contact me.

If you wish to access the confidential information, please refer to the form "Request for Removal of Information from Environmental Services Divison's Locked Files".

tkr
cc: OTMC Files
WQD Files

REQUEST FOR REMOVAL OF CONFIDENTIAL MATERIALS FROM ENVIRONMENTAL SERVICES DIVISION'S LOCKED FILE

Material Requested: _____

_____

_____

_____

Requested By: _____

Reason for Request: _____

_____

_____

_____

I will maintain the above confidential material within my possession at all times and allow no copies to be made of the material nor review of the material by unauthorized personnel.

_____

Signature

OTMC Justification: _____

_____

_____

_____

Authorized By: _____

Gary E. Guenther, Chief
Environmental Services Division

Date Removed: _____

Signature: _____

Date Returned: _____

Signature: _____

DNR/OTMC
3/25/80 Rev.

STATE OF MICHIGAN TRAN_ IITTAL

TO:

1 Tom Newell

2 Dave

3

4

FOR ACTION AS INDICATED

☐ SIGNATURE	☐ REPLY—MY SIGNATURE	☐ NOTE AND FORWARD
☐ APPROVAL	☐ REPLY—COPY TO ME	☐ NOTE AND FILE
☐ ACTION	☐ PLEASE SUMMARIZE	☐ NOTE AND RETURN
☐ COMMENTS	☐ PLEASE INVESTIGATE	☐ PLEASE PHONE ME
☒ INFORMATION	☐ FORWARDED PER REQUEST	☐ PLEASE SEE ME

REMARKS:

FROM	DATE
Chuey	7/1/80

FORM 10575

1